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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/836,778	04/17/2001	Frank Joseph Pompei	HOLOS-005XX	6862
207	7590	05/07/2004	EXAMINER	
WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP TEN POST OFFICE SQUARE BOSTON, MA 02109			MICHALSKI, JUSTIN I	
			ART UNIT	PAPER NUMBER
			2644	2

DATE MAILED: 05/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/836,778

Applicant(s)

POMPEI, FRANK JOSEPH

Examiner

Justin Michalski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 7-10, 13-15, and 19-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Bank et al. (Hereinafter "Bank") (US patent 6,628,791).

Regarding Claim 1, Bank discloses a parametric audio amplifier system (Figure 7), comprising: at least one amplifier including an input and an output (amplifier 72), the amplifier being configured to receive an ultrasonic signal modulated with an audio signal at its input (signal from 70 to 72), amplify the modulated ultrasonic signal (amplifier 72), and provide the amplified ultrasonic signal to its output (output from 72 to 10); and at least one acoustic transducer assembly (references 74 and 76) including at least one input (signal from 10 to 74), at least one output (audio output of transducer 76), a bias generator (bias generator 74), at least one acoustic transducer (transducer 76), and at least one component interfacing the amplifier and the acoustic transducer (reference 10), the input of the acoustic transducer (input to 74) assembly being coupled to the output of the amplifier (amplifier 72), the interface component being configured to receive the amplified ultrasonic signal and provide a drive signal corresponding to the

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ultrasonic signal to the acoustic transducer (interface 10 transfers signal from amplifier 72 to transducer 74 and 76), the bias generator being configured to generate a bias level and provide the bias level to the acoustic transducer (Bank discloses stators 90 and 92 providing bias voltage) (Column 7, lines 34-46), and the acoustic transducer being configured to receive the drive signal and the bias level (Bank discloses transducers of Figure 8 receiving drive signals and bias voltage from transformers 98 and 100) (Column 7, lines 35-51). Generate a sonic beam corresponding the drive signal and the bias level, and project the sonic beam through the air to regenerate the audio signal (i.e. output of transducers).

Regarding Claim 2, Bank further discloses a connection interconnecting the amplifier and the acoustic transducer assembly and configured to carry at least the amplified ultrasonic signal from the amplifier to the acoustic transducer assembly (Figure 7 discloses interconnection 10 carrying the modulated signal from the amplifier 72 to the transducer assembly (74 and 76).

Regarding Claim 3, Bank further discloses the interface component comprises a step-up transformer (Column 4, lines 64-67) including a primary winding (Figure 6 input 12) configured to receive the amplified ultrasonic signal and a secondary winding (Figure 6, winding 11) configured to provide the drive signal to the acoustic transducer (SPKR_MEMBRANE).

Regarding Claim 7, Bank further discloses the bias generator is configured to provide a DC bias voltage level to the acoustic transducer (Bank discloses a self biasing embodiment containing stators 90, 92, 94, and 96 to bias circuit).

Regarding Claim 8, Bank further discloses the bias generator is configured to provide a low frequency AC bias voltage level to the acoustic transducer (Bank discloses stators 90 and 92 which are used to bias the transducer receive their power from transformer 98 which receives an AC input (i.e. bias voltage is from AC input voltage) (Column 7, lines 35-45).

Regarding Claim 9, Bank further discloses the ultrasonic signal comprises a source of energy for the bias generator.

Regarding Claim 10, Bank further discloses the amplifier is disposed in an amplifier assembly (Figure 7 discloses amplifier 72 as an assembly), the amplifier assembly further including at least one voltage source configured to generate a voltage level (It is inherent that an amplifier would have a voltage source of some sort in order to produce an output voltage).

Regarding claim 13, Bank further discloses the connection is further configured to carry the voltage level from the amplifier assembly to the acoustic transducer assembly (Figure 7 discloses connection 10 as transferring signal from amplifier assembly 72 to the transducer assembly 74 and 76), and the bias generator is further configured to receive the voltage level as input (Bank discloses that stators 90 and 92 receive voltage for biasing circuit from taps 102, 104, 106, and 108 of transformer 10) (Column 7, lines 37-46).

Regarding Claim 14, Bank further discloses the connection (Figure 8, primary windings of 98 and 100) is further configured to carry the voltage level from the amplifier assembly (Figure 7, amplifier 72) to the acoustic transducer assembly (Figure 7,

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references 74 and 76), and the bias generator is further configured to receive the voltage level as input (Bank discloses stators 90 and 92, which are used to bias the circuit, receive their power from transformer 98) (Column 7, lines 36-44).

Regarding Claim 15, Bank further discloses wherein the connection (Figure 8, transformer 98) is further configured to carry the amplified ultrasonic signal having the voltage level superimposed thereon from the amplifier (Figure 7, amplifier 72) to the acoustic transducer assembly (references 74 and 76).

Regarding Claim 19, Bank discloses a method of operating a parametric audio amplifier system (Figure 7), comprising the steps of: receiving an ultrasonic signal modulated with an audio signal by an amplifier (amplifier 72); amplifying the modulated ultrasonic signal by the amplifier; providing the amplified ultrasonic signal to an acoustic transducer assembly (references 74 and 76) by a connection interconnecting the amplifier and the acoustic transducer assembly (interconnection 10); receiving the amplified ultrasonic signal by at least one interface component included in the acoustic transducer assembly (input to 74); providing a drive signal (output of 74 to 76) corresponding to the amplified ultrasonic signal to at least one acoustic transducer included in the acoustic transducer assembly by the interface component; providing a bias level to the acoustic transducer by a bias generator (bias generator 74) included in the acoustic transducer assembly; receiving the drive signal and the bias level by the acoustic transducer (output of 74 to 76); and generating a sonic beam corresponding to the drive signal and the bias level by the acoustic transducer (output of transducer 76).

Regarding Claim 20, Bank further discloses wherein the amplifier (amplifier 72) is disposed in an amplifier assembly (Bank shows amplifier as disposed in an assembly in Figure 7), and further including the step of generating a voltage level by a voltage source included in the amplifier assembly (It is inherent that an amplifier would generate a voltage level by a voltage source in order to produce an output voltage).

Regarding Claim 21, Bank further discloses the first providing step further includes providing the voltage level to the acoustic transducer assembly by the connection for use by the bias generator included in the acoustic transducer assembly (Bank discloses that stators 90 and 92 receive voltage for biasing circuit from taps 102, 104, 106, and 108 of transformer 10) (Column 7, lines 37-46).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being obvious over Bank as applied to claim 1 in view of Pompei (US Patent Application Publication 2001/0007591).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome

by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Regarding Claim 5, Bank discloses a system as stated apropos of claim 1 above but does not disclose a resonant inductor configured to receive the amplified ultrasonic signal and provide the drive signal to the acoustic transducer. Pompei discloses a parametric audio system comprising (Figure 4) of an amplifier (404), interconnection (406) connected to transducer assembly including transducer (0) and bias source (402). Figure 4 discloses inductor 412 receiving the amplified ultrasonic signal from inductor 406 and providing a drive signal to the acoustic transducer (0). Pompei discloses that inductor 412 is used to isolate the AC and DC portions of the circuit from each other (Page 4, paragraph 35). Therefore, it would have been obvious to one of ordinary skill

in the art at the time the invention was made to include an inductor in the parametric audio system in order to separate the AC and DC components from each other and ensure proper bias of the transducer.

Regarding Claim 6, Pompei further discloses that the inductor is coupled the capacitive load of the membrane transducer to form a resonant circuit of at least 45kHz (i.e. ultrasonic) (Paragraph 0008).

Claims 16-18 are rejected under 35 U.S.C. 103(a) as being obvious over Bank as applied to claim 15 in view of Pompei (US Patent Application Publication 2001/0007591).

Regarding Claim 16, Bank discloses a system as stated apropos of claim 15 above but does not disclose a capacitor between the acoustic transducer and amplifier to block the voltage level from the acoustic transducer. Pompei discloses a parametric audio system comprising (Figure 4) of an amplifier (404), interconnection (406) connected to transducer assembly including transducer (0) and bias source (402). Figure 4 discloses a blocking capacitor 410 to block the voltage level from the acoustic transducer and provide the amplified ultrasonic signal to the acoustic transducer (0) and to tune the capacitance of the acoustic transducer (Page 4, paragraph 35). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a blocking capacitor in the parametric audio system in order to tune the capacitance of the acoustic transducer.

Regarding Claim 17, Pompei further discloses a capacitor (Figure 4, capacitor 410) coupled between the acoustic transducer (0) and the connection to the amplifier assembly (406), the capacitor being configured to block the bias level from the connection to the amplifier assembly (i.e. separate ac from dc) (Page 4, paragraph 35).

Regarding Claim 18, Pompei further discloses an inductor (Figure 4, inductor 412) coupled between the connection to the amplifier assembly (406) and the bias generator (402), to block the amplified ultrasonic signal from the bias generator and provide the voltage level to the bias generator. Pompei discloses that inductor 412 is used to isolate (i.e. block) the AC and DC portions of the circuit from each other (Page 4, paragraph 35).

4. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bank as applied to claim 10 above in view of Manabe (US Patent 6,556,687).

Regarding Claim 11, Bank discloses a system as stated apropos of claim 10 above but does not disclose the voltage source no greater than 50 volts. Manabe discloses an ultrasonic sound system comprising an amplifier (30) connected to drive a transducer element (41) via signal (S4). Manabe discloses that signal S4 has a voltage amplitude of 20V to 40V. It is inherent that a signal with an amplitude of 20V to 40V would consist of a DC component that is no greater than 50V. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to drive a transducer with amplifier voltage of no greater than 50V to produce an ultrasonic sound signal as taught by Manabe.

Regarding Claim 12, Bank discloses a system as stated apropos of claim 10 above but does not disclose the voltage source no greater than 50 volts. Manabe discloses an ultrasonic sound system comprising an amplifier (30) connected to drive a transducer element (41) via signal (S4). Manabe discloses that signal S4 has a voltage amplitude of 20V to 40V. It is inherent that a signal with an amplitude of 20V to 40V would consist of an AC component that is no greater than 50V. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to drive a transducer with amplifier voltage of no greater than 50V to produce an ultrasonic sound signal as taught by Manabe.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Maeda (US Patent 5,471,540) discloses amplifier and bias generation on transducer side of transformer.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Michalski whose telephone number is (703)305-5598. The examiner can normally be reached on 8 Hours, 5 day/week.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen can be reached on (703)305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JIM


XU MEI
PRIMARY EXAMINER